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DOLL JOINT

The invention relates to a joint for securing movable elements to a doll's body or for connecting individual elements, in particular doll's arm parts and/or doll's leg parts, to one another.

PRIOR ART

Dolls of many shapes and designs are known. The present document is concerned primarily with extremely high-quality dolls which are extremely valuable not only because of their design, but also because of the material used. These dolls are intended to be as lifelike as possible, some of them being of a size corresponding to actual life size. Each type of doll is manufactured only in a small number and is in most cases made of a special plastic imitating the body, for example a vinyl. They are cast in special molds. To connect the individual movable elements, such as the head, arms and legs, joints are known, such as the ones that are described in DE 40 37 962 or DE 296 02 347.

DE 40 37 962 describes a connecting piece composed of a textile material which is filled with filler. Although this allows each limb of a doll to be brought into a lifelike position, this position cannot be maintained without assistance.

DE 296 02 347 discloses a joint which brings the movable elements of the doll permanently into a desired position. As before, however, the doll does not have a lifelike appearance, on the one hand because the joint is covered by a textile sleeve. On the other hand, the lifelike effect of the doll is compromised by the fact that, when the doll is taken hold of at the joint, an impression is formed in the textile sleeve, since the latter is not designed to be shape-stable, but instead serves only for covering the joint.

Moreover, it has hitherto not been possible to move or rotate individual parts, for example of a doll's arm or of a doll's leg.

OBJECT

Therefore, the object of the present invention is, on the one hand, to bring the movable elements of the doll permanently into a desired position that is as lifelike as possible, and, on the other hand, to ensure a lifelike effect when the doll is taken hold of. In addition, individual parts of the doll's arm or of the doll's leg should be able to be moved. Moreover, the useful life of the joints and their ability to withstand stresses are also to be improved, and assembly is to be made simpler. Manufacturing costs are also to be reduced.

SOLUTION

The object is achieved by the fact that a rotary element is inserted rotatably in the doll's body and/or in the element and/or in the element and is connected rotatably to an end area of the element or to an element fitted therein.

The rotary element and the respective end area of the doll's arm part or doll's leg part and the additional element inserted into the doll's arm part or doll's leg part are in this case designed in such a way that, in the position of use, they form a kind of ball, as is also present in the human body. This permits a better positioning of the movable elements, similarly to the human body. Moreover, because of this design, the doll also acts in a lifelike manner when taken hold of, since the user's fingers do not press into the textile sleeve in this area of the doll, as was hitherto the case, and come up against the joint made from metal or the like.

In the position of use, the joint is composed of a rotary element and of the spherical end area of the doll's arm part or doll's leg part or of the rotary element and the spherical element, in which case the rotary element is inserted into a slit of the spherical end area or of the spherical element, and the respective elements are connected to one another by a securing means, preferably in the form of

a conventional screw and a nut. Other kinds of securing means are conceivable and are intended to be covered by the present invention. It is likewise conceivable to use not just one securing means, but several and/or different securing means. This possibility too is intended to be covered by the present invention.

The rotary element is preferably shaped in particular as a disk and thus fits into the slit provided for it in the spherical end area of the doll's arm part or doll's leg part or of the spherical element. Moreover, the diameter of the rotary element preferably corresponds approximately to the diameter of the spherical end area or of the spherical element, so that no transitions are present here between the rotary element and the spherical end area of the doll's arm part or doll's leg part or of the spherical element, and instead the respective elements lie in approximately a common plane and rest flush on one another.

However, it is possible, for example, to make the diameter of the rotary element smaller than the diameter of the spherical end area of the doll's arm part or doll's leg part or of the spherical element. It is also conceivable for the rotary element, and thus also the slit provided for it in the spherical end area of the doll's arm part or doll's leg part or of the spherical element, to be configured in any other conceivable form. The various possible ways of designing the rotary element and the spherical end area of

the doll's arm part or doll's leg part and the spherical element are intended to be covered by the present invention, however.

The rotary element is moreover assigned a holding element which is inserted into a correspondingly shaped recess in the doll's body or in the doll's arm part or doll's leg part. A constriction in the recess engages behind the holding element and secures the latter, and thus also the rotary element, in the recess, as a result of which it is possible to prevent the whole joint connection from slipping out.

The spherical element is also assigned a holding element which is inserted into a recess provided for it in the doll's arm part or doll's leg part and is secured there by means of a constriction. Release of the spherical element from its connection to the doll's arm part or doll's leg part is thus avoided.

Other possible ways of securing the holding element in the doll's body or in the doll's arm part or doll's leg part are conceivable and are intended to be covered by the present invention too.

The rotary element and the holding element are preferably designed in one piece, in which case both the rotary element and the holding element are arranged rotatably in the recess and in the doll's body. However, it is also possible for the holding element and the rotary element to be

produced in two pieces, in which case the holding element is inserted fixedly into the recess and only the rotary element is connected rotatably to it. The connection between the holding element and the rotary element can be any desired conceivable connection. It is important, simply, that the rotary element is able to rotate relative to the holding element.

The spherical element and the associated holding element are also preferably made in one piece, in which case the spherical element and also the holding element are arranged rotatably in the recess or in the doll's arm part or doll's leg part. However, the possibility of a two-piece design of the spherical element and of the holding element is intended to be covered by the present invention.

At least the visible parts of the joint, the rotary element and the spherical end area of the doll's arm part or doll's leg part and of the spherical element are made from the same material as the rest of the doll's body, so that the doll's body also looks almost lifelike without clothes and as such can be taken hold of or can be displayed. Of course, it is nevertheless possible to produce the rotary element and the spherical end area of the doll's body from other materials.

The joint serves, on the one hand, for connecting and securing the doll's arms to an upper part of the doll's body. However, it is also conceivable to use a connection of this

kind for the doll's legs or other parts of the doll's body and also for a head, so that in this case it would be possible not only for the head to turn, but also for it to nod. These possibilities concerning the design and application of the joint are intended to be covered by the present invention.

Moreover, the joint is used for connecting individual parts of the doll's arms or doll's legs to one another. It is also conceivable, however, to use such a connection for the whole of the doll's body. In this way, it would be possible to bend the doll or to turn the doll's upper body. In this respect too, no limits are placed on the invention.

With the present joint, it is possible, for example, to turn a doll's arms or doll's legs in any imaginable direction, without the doll losing any of its lifelike quality when looked at or when taken hold of.

DESCRIPTION OF THE FIGURES

Further advantages, features and details will become evident from the description of the following illustrative embodiments and by reference to the drawing, in which:

Figure 1 shows a schematic front view of an upper region of a doll's body, with doll's arm parts connected via joints;

Figure 2a shows a simplified exploded view of the

individual elements forming the respective joints;

Figure 2b shows the exploded view according to Figure 2a, with some of the elements turned through 90°;

Figure 3 shows a longitudinal section through the joint inserted into the doll's body, and the joint between two doll's arm parts in accordance with one illustrative embodiment of the present invention;

Figure 4 shows a longitudinal section through a further illustrative embodiment of the joints according to Figure 3;

Figure 5 shows a plan view of the joints according to Figures 3 and 4;

Figure 6 shows the plan view of the joints in Figure 5 when turned through 90°;

Figure 7 shows a schematic side view of a doll's leg with a knee joint as a further illustrative embodiment of a joint according to the present invention;

Figure 8 shows a rear view of the doll's leg with the knee joint according to Figure 7;

Figure 9a shows a simplified exploded view of the individual elements forming the knee joint;

Figure 9b shows the exploded view according to Figure 9a, with some of the elements turned through 90°;

Figure 10 shows a longitudinal section through the knee joint according to one illustrative embodiment of the present invention; and

Figure 11 shows a longitudinal section through a further illustrative embodiment of the knee joint according to Figure 10.

Figure 1 depicts the upper region of a doll's body 1 to which a doll's arm part 3.1 or 3.2 is secured via a respective joint 2. At the other end, a further doll's arm part 3.3 is secured on the doll's arm part 3.1 via a further joint 20.

The joints 2 and 20 are composed, as shown in Figures 2a and 2b, of a rotary element 4, 40, preferably in the form of a disk, and of a spherical end area 5 of the doll's arm part 3.1 itself or a spherical element 50. A diameter d_1, d_3 of the rotary element 4, 40, respectively, corresponds to a diameter d_2, d_4 of the spherical end area 5 of the doll's arm part 3.1 and the spherical element 50, so that outer faces 6, 7 of the rotary element 4 and of the spherical end area 5 or outer faces 41, 51 of the rotary element 40 or of the spherical end 50 lie almost in one plane in the position of use and rest flush on one another.

The rotary element 4, 40 is also assigned a holding element 8, 42, respectively, which is assigned a guide 9, 43, respectively, which in turn is concavely shaped in order to be able to guide a part of the spherical end area 5 of the doll's arm part 3.1 or the spherical element 50.

The spherical element 50 is also assigned a holding element 52, which is assigned a guide 53. However, the guide

53 is in this case only partially concave, in order to guide a part of the outer face 41 of the rotary element 40 in the position of use. Both the holding element 52 and the guide 53 are preferably formed in one piece with the spherical element 50, as is shown in Figures 3 and 4.

As is shown in Figure 3, the holding element 8, 42 and the guide 9, 43 are preferably formed in one piece with the rotary element 4, 40, respectively. However, as is shown in Figure 4, they can also be connected via a connection element 10, 44 to the rotary element 4, 40, respectively, and can thus be formed in two pieces. The rotary element 4, 40 is preferably rotatable in a free and endless manner.

In the position of use, the holding element 8, 42, 52 and the guide 9, 43, 53 are inserted into a correspondingly shaped recess 11, 45, 55, respectively, in the doll's body 1, in the doll's arm part 3.3 and the doll's arm part 3.1, and a constriction 12, 46, 56 of the recess 11, 45, 55 engages behind the holding element 8, 42, 52 and secures this in the recess 11, 45, 55, respectively.

In the illustrative embodiment according to Figure 3, the recess 11, 45, 55 and the constriction 12, 46, 56 lie around the holding element 8, 42, 52, respectively, in such a way that a rotation of the holding element 8, 42, 52 is still possible in the recess 11, 45, 55, respectively.

In the illustrative embodiment according to Figure 4, the recess 11, 45 and the constriction 12, 46 are injected

solidly around the holding element 8, 42, respectively, so that a rotation of the holding element 8, 42 is no longer possible. Only the rotary element 4, 40 is still rotatable via the connection element 10, 44, respectively.

For assembling the joint 2, 20, the rotary element 4, 40, respectively, is inserted into a correspondingly shaped slit 13, 54, respectively, of the spherical end area 5 of the doll's arm part 3.1 and of the spherical element 50. The concave part of the guide 9, 43 rests on a part of the outer face 7, 51, respectively, of the spherical end area 5 of the doll's arm part 3.1 and of the spherical element 50. At the same time, the concave part of the guide 53 rests on the outer face 41 of the rotary element 40.

Both respective elements are secured to one another by a securing means 14, 21, which is preferably a screw with an associated nut. For this purpose, bores 15.1, 15.2 and 15.3, 15.4 for receiving the screw 14, 21 with nut are provided both in the spherical end area 5 of the doll's arm part 3.1 and of the spherical element 50 and also in the rotary element 4, 40.

The way in which the present illustrative embodiment functions is as follows:

After insertion of the rotary element 4 and the holding element 8 into the recess 11 in the doll's body 1, the spherical end area 5 of the doll's arm part 3.1 is pushed onto the rotary element 4, so that the rotary element 4 can

move into the slit 13 provided for it in the spherical end area 5. The screw 14 is then introduced into the bores 15.1 and 15.2 provided for it in the rotary element 4 and spherical end area 5 of the doll's arm 3. The nut is introduced from the other side and comes into engagement with the screw 14. The doll's arm part 3.1 or its spherical end area 5 is thus connected fixedly to the rotary element 4, which is in turn secured by means of the holding element 8 in the doll's body 1.

The spherical element 50 and the holding element 52 are then inserted into the recess 55 of the doll's arm part 3.1. The rotary element 40 and holding element 42 are also inserted into the recess 45 of the doll's arm part 3.3. After insertion of both elements into the recesses provided for this purpose, the spherical element 50 is pushed onto the rotary element 40, so that the rotary element 40 can move into the slit 54 provided for it in the spherical element 50.

The screw 21 is then introduced into the bores 15.3 and 15.4 provided for it in the rotary element 40 and spherical element 50. The nut is introduced from the other side and comes into engagement with the screw 21. The spherical element 50, and with it the doll's arm part 3.1, is thus connected fixedly to the rotary element 40 and consequently to the doll's arm part 3.3.

The illustrative embodiment of the joint 2 permits movement of the doll's arm parts 3.1 in a wide variety of

directions. For example, as is shown in Figure 5, the doll's arm part 3.1 can be moved or pivoted up or down in the direction of the arrows 16 and 17, corresponding to a rotation of the doll's arm part 3.1 about an axis C in Figure 6. However, it can also be moved at the same time about an axis A.

Moreover, the joint 20 permits a movement of the doll's arm part 3.3 in a wide variety of directions. For example, as is shown in Figures 5 and 6, the doll's arm part 3.3 can be moved or pivoted up or down in the direction of the arrows 22 and 23, corresponding to a rotation of the doll's arm part 3.3 about an axis B in Figure 6. Moreover, the doll's arm part 3.3 can be rotated either with the joint 20 about an axis D, or without the joint 20 about an axis E.

A further illustrative embodiment of a joint is shown in Figures 7 through 11. Here, a joint 200 is used for rotatable and pivotable connection of two doll's leg parts 30.1 and 30.2.

The joint 200 is composed, as shown in Figures 9a and 9b, of a rotary element 400, preferably in the form of a disk, and of a spherical end area 500 of the doll's leg part 30.1 itself. A diameter d_5 of the rotary element 400 corresponds to a diameter d_6 of the spherical end area 500 of the doll's leg part 30.1, so that outer faces 410, 510 of the rotary element 400 and of the spherical end area 500 lie almost in one plane in the position of use and rest flush on

one another.

The rotary element 400 is also assigned a holding element 420, which is assigned a guide 430, which is concavely shaped at one end in order to be able to guide a part of the spherical end area 500 of the doll's leg part 30.1 in the position of use.

As is shown in Figure 10, the holding element 420 and the guide 430 are preferably formed in one piece with the rotary element 400. However, as is shown in Figure 11, they can also be connected via a connection element 440 to the rotary element 400 and can thus be formed in two pieces. The rotary element 400 is preferably rotatable in a free and endless manner.

In the position of use, the holding element 420 and the guide 430 are inserted into a correspondingly shaped recess 450 in the doll's leg part 30.2, and a constriction 460 of the recess 450 engages behind the holding element 420 and secures this in the recess 450.

In the illustrative embodiment according to Figure 10, the recess 450 and the constriction 460 lie around the holding element 420 in such a way that a rotation of the holding element 420 is still possible in the recess 450.

In the illustrative embodiment according to Figure 11, the recess 450 and the constriction 460 are injected solidly around the holding element 420, so that a rotation of the holding element 420 is no longer possible. Only the

rotary element 400 is still rotatable via the connection element 440.

For assembling the joint 200, the rotary element 400 is inserted into a correspondingly shaped slit 540 of the spherical end area 500 of the doll's leg part 30.1. The concave part of the guide 430 rests on a part of the outer face 510 of the spherical end area 500 of the doll's leg part 30.1.

Both elements are secured to one another by a securing means 210, which is preferably a screw with an associated nut. For this purpose, bores 15.5 and 15.6 for receiving the screw 210 with nut are provided both in the spherical end area 500 of the doll's leg part 30.1 and also in the rotary element 400.

The way in which the present illustrative embodiment functions is as follows:

After insertion of the rotary element 400 and the holding element 420 into the recess 450 in the doll's leg part 30.2, the spherical end area 500 of the doll's leg part 30.1 is pushed onto the rotary element 400, so that the rotary element 400 can move into the slit 540 provided for it in the spherical end area 500. The screw 210 is then introduced into the bores 15.5 and 15.6 provided for it in the rotary element 400 and spherical end area 500 of the doll's leg part 30.1. The nut is introduced from the other side and comes into engagement with the screw 210. The doll's

leg part 30.1 or its spherical end area 500 is thus connected fixedly to the rotary element 400, which is in turn secured by means of the holding element 420 in the doll's leg part 30.2.

The illustrative embodiment of the joint 200 permits movement of the doll's leg part 30.2 in a wide variety of directions. For example, as is shown in Figure 7, the doll's leg part 30.2 can be moved or pivoted up or down in the direction of the arrows 220 and 230, corresponding to a rotation of the doll's leg part 30.2 about an axis F in Figure 8. However, it can also be moved at the same time about an axis G.

List of reference signs

1	doll's body
2	joint
3	element
4	rotary element
5	end area
6	outer face
7	outer face
8	holding element
9	guide
10	connection element
11	recess
12	constriction
13	slit
14	securing means
15	bore
16	arrow
17	arrow
20	joint
21	securing means
22	arrow
23	arrow

30 doll's leg

40 rotary element
41 outer face
42 holding element
43 guide
44 connection element
45 recess
46 constriction

50 spherical element
51 outer face
52 holding element
53 guide
54 slit
55 recess
56 constriction

200 joint
210 securing means
220 arrow
230 arrow

400 rotary element
410 outer face
420 holding element

430	guide
440	connection element
450	recess
460	constriction
500	spherical element
510	outer face
520	slit
d_1	diameter
d_2	diameter
d_3	diameter
d_4	diameter
d_5	diameter
d_6	diameter
A	axis
B	axis
C	axis
D	axis
E	axis
F	axis
G	axis